Given: \( t = 1.6 \mu, \quad \lambda = 0.5 \mu. \)

Determine number of dark fringes in the interval \( OA. \) The dark fringe at \( O \) is the first fringe. There after a dark fringe is included in the count only when the minimum point is included.

A) \( N_{dark} = 5 \)
B) \( N_{dark} = 6 \)
C) \( N_{dark} = 7 \)
D) \( N_{dark} = 8 \)

\[
N_{dark} = \text{Integer}\left(\frac{\phi}{2\pi} + \frac{1}{2}\right), \quad \text{with} \quad \phi = \phi_{path} + |\phi_{refl1} - \phi_{refl2}| \quad \text{and} \quad \text{“floor or integerize”}: \quad e.g. \quad \text{floor}(3.9) = 3. \quad \text{Therefore}
\]
\[
\frac{\phi}{2\pi} = \frac{2t}{\lambda} + \frac{1}{2} = \frac{2 \times 1.6}{0.5} + 0.5 = 6.9
\]

\[
N_{dark} = \text{Integer}(6.9 + 0.5) = 7.
\]

Answer C.

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